REMARKS

Applicant would like to thank the Examiner for agreeing to meet with his representative, Jennifer Yancy, on October 18, 2005. During the interview Ms. Yancy and Examiner Hruskoci discussed the fact that the super-buoyant particles claimed by the present application would make the apparatus and method disclosed in Iwatani inoperable. Applicant has argued that using super-buoyant particle having the size presently claimed would cause problems such as clogging and sludge formation that would make the Iwatani system inoperable. Particularly, the Applicant has provided herein evidence that the siphon breakers in the Iwatani system would become clogged and inoperable using the super-buoyant particles claimed in the present application. As requested by the Examiner, the Applicant has submitted a Declaration including evidence that siphon breaker openings are known to be significantly larger than the super-buoyant particles claimed in the present application.

Claims 1-3, 7, 9, 21-23, 25 and 36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Iwatani, 4,198,301. The Examiner has indicated that the present claims differ from Iwatani by reciting the apparatus includes particles having a specific size, and a specific storage reservoir connected to the inlet port of said filter chamber. The Examiner has further asserted that the filter particles recited in the instant claims are considered indistinguishable from the filter particles utilized in Iwatani. Applicant asserts that one of ordinary skill in the art would not be motivated to use super-buoyant particles of the size claimed for a variety of reasons.

1. **Drawings in Iwatani not to scale.** The Examiner indicates that it "appears from Fig. 1 of Iwatani that the floating filter medium 10 includes particles which are smaller than the adsorbent or filter material 11, which can include zeolite, activated carbon, or sand". It is clear

from MPEP § 2125 that proportions of features in a drawing are not evidence of actual proportions when drawings are not to scale. The Iwatani reference provides no indication that the drawings are to scale. Therefore, the relevant size of the materials disclosed in Fig. 1 are not evidence of the size of the floating filter medium 10 and adsorbent material 11.

2. Iwatani teaches adsorbent material that is smaller in diameter than the floating filter media. It appears from the disclosure in Iwatani that the adsorbent material 11 actually has a significantly smaller diameter than the floating filter medium 10. In column 5, lines 4-14, the Iwatani reference states that the "upward streams of water meet with resistance from the layer B of adsorbent material 11". The Iwatani reference further states that this resistance, and the fact that it is encountered in the top portion of the filtration system, is what causes the sludge contained in the water to be filtered out at the bottom of the floating filter medium 10 without being injected deep into layer A. One of ordinary skill in the art would recognize that in order for the upward streams of water to meet with the required resistance from layer B, the adsorbent material 11 must have a significantly smaller diameter than the floating filter medium which the streams of water encounter initially in the filter chamber 5. In this situation, the resistance to the flow is greater in layer B including the adsorbent material than in layer A of floating filter medium. If the diameter of the floating filter medium 10 was smaller than that of the adsorbent material 11, the water to be filtered would encounter resistance to its flow as soon as it encountered the bottom of the floating filter medium. Such resistance would automatically dictate that any sludge contained in the water would be injected deeply into the buoyant media layer as the water flowed forcefully into the floating filter medium bed. If both media were the same size, the resistance to flow through first the floating filter medium and then the adsorbent material would be uniform. In such a situation, water would flow through both beds with

uniform force, and the sludge contained in the water would again be injected deeply into floating filter medium bed. In either of the above cases, more force is required to push the water through the floating filter media. This increased force would push the sludge in the water deep into the floating filter media bed; an effect Iwatani clearly wishes to avoid. In contrast, by utilizing floating filter media which has a significantly larger diameter than that of the adsorbent filter medium, the restriction to flow occurs as the water enters the adsorbent media bed as described by Iwatani. This restriction in turn reduces the force of the water entering the floating filter medium and thus ensures that all sludge particles are caught at the bottom face of the floating filter media bed. Thus, contrary to the Examiner's assertion, the Iwatani description makes it obvious that the floating filter media contained in chamber 5 must be a significantly larger size media than the adsorbent material contained in reservoir 4.

3. Iwatani reference would be inoperable with smaller floating material. Applicant hereby submits a Declaration that the system disclosed in Iwatani would become clogged and thus inoperable if floating filter media of the size presently claimed were used. Included with the Declaration is an attachment indicating that siphon breakers, as required in Iwatani, are known to include ports that are substantially larger than the super-buoyant particles presently claimed. The Iwatani reference discloses a siphon breaker **33** having air feeding ports **33a** at one end. Specifically, the siphon breaker **33** is shown in the back-flow washing operation in Fig. 3. The ports **33a** in the siphon breaker **33** must be smaller in size than the floating filter media to prevent the floating filter media from being lost during the back-wash operation or prevent clogging of the back-wash system. As the Declaration shows, siphon breakers are known to have ports with a size of ¼ inch or greater. Therefore, the Iwatani reference would need to have floating filter media larger than ¼ inch diameter in order to operate. Since the present claims

include super-buoyant particles substantially smaller than the size required in Iwatani, one of ordinary skill in the art would not be motivated to use the presently claimed super-buoyant particles in Iwatani's filtration system.

4. Iwatani adsorbent filter media also appears larger than claimed sizes. The Iwatani reference provides no indication of the size of either the floating filter media or the adsorbent filter media. The Iwatani reference indicates that the adsorbent material may be zeolite, activated carbon or sand. However, these particles may be supplied in a variety of sizes. Applicant additionally asserts that one of ordinary skill in the art would use larger size adsorbent material to prevent clogging and loss of material through the ports in strainer **6.** The Iwatani reference provides that "the siphon breaker 33 is of same construction as the strainer 6" (see column 4, lines 32-34). If the adsorbent particles were not larger than the ports, the adsorbent particles would pass through the ports and subsequently be washed out of the filter along with the captured sludge particles. Therefore, the Iwatani reference teaches away from the use of both buoyant and non-buoyant particles of the size claimed in the present application.

5. Small super-buoyant particles have a tendency to clump. Finally, as provided in Applicant's previous response, one of ordinary skill in the art would not be motivated to use particles of the size claimed in the present application because of the problems that are encountered during operation. Primarily, due to the high surface area of the small diameter media, contaminant particles that fill the interstices between the media particles can act like a glue which makes the media particles adhere to one another and form clumps which lead to the formation of non-homogeneities within the bed. In the case of small diameter buoyant media, the light weight of the media particles makes it even more difficult to break these clumps apart to clean the media particles. Because the backwash systems previously used in systems including

buoyant particles, such as the Hsuing and Iwatani, are relatively gentle in nature, these non-homogeneities cannot be removed from the bed, and the bed performance declines.

For the foregoing reasons, Applicant submits that the rejection has been overcome and requests reconsideration and allowance of the claims.

Claims 32, 33 and 35 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Iwatani, and further in view of Hsiung, 4,608,181. For the reasons stated above, Applicant submits that neither the Iwatani reference nor the Hsiung reference teach or disclose the use of super-buoyant particles of the size presently claimed. Therefore, Applicant submits that the rejection has been overcome and requests reconsideration and allowance of the claims.

Claims 6, 24, and 29-31 stand rejected under 35 U.S.C. 102(a) as being unpatentable over Iwatani as above, and further in view of Cochrane 4,211,656. For the reasons stated above, Applicant submits that neither the Iwatani reference nor the Hsiung reference teach or disclose the use of super-buoyant particles of the size presently claimed. Therefore, Applicant submits that the rejection has been overcome and requests reconsideration and allowance of the claims.

Claim 10 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Iwatani as above, and further in view of Daley 5,178,772. For the reasons stated above, Applicant submits that neither the Iwatani reference nor the Hsiung reference teach or disclose the use of super-buoyant particles of the size presently claimed. Therefore, Applicant submits that the rejection has been overcome and requests reconsideration and allowance of the claims.

terminal disclaimer to overcome this rejection. The Examiner is invited to contact the Applicant's attorney to expedite the filing of a terminal disclaimer.

Claims 6, 24, and 29-31 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent 6,638,422 in view of Cochrane 4,211,656. Upon notification of allowable subject matter, Applicant is prepared to submit a terminal disclaimer to overcome this rejection. The Examiner is invited to contact the Applicant's attorney to expedite the filing of a terminal disclaimer.

Claims 28 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Since it has been submitted that the independent claims are allowable, Applicant submits that this objection has been overcome and requests reconsideration and allowance of the claims.

Applicant submits that the claims of the application are now in condition for allowance. Therefore, Applicant respectfully requests reconsideration and allowance of the claims.

Respectfully submitted,

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